Annual Performance Report
Specialty Crop Block Grant Program
Kansas Department of Agriculture
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Program Contact
Kellen L. Liebsch, Economist
Kansas Department of Agriculture
1320 Research Park Drive
Manhattan, KS 66502
Phone: (785) 567-6726
kellen.liebsch@ks.gov

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*Year in parenthesis ( ) indicates the year the final report was filed

Project Title:

Highland Community College 2014 Viticulture and Enology Extension Project
(Oct 2013-Sep 2014)

Project Summary:

This project had two somewhat distinct activities. In 2010 HCC accepted the "ag extension" role for grapes and wine in Kansas. Having received SCBG funding each year since, HCC has completed 150+ consultation visits, answered countless phone calls and emails, and hosted 23 workshops with 350+ attendees. This project sought funds to continue those activities including six workshops in 2014.

The second portion of this project was in direct response to help Kansas wine industry's desperate need for more vineyard acreage. HCC proposed to speed along the vine planting process by purchasing a vine Transplanter (and leasing ancillary equipment). One workshop focused on the Transplanter project, and HCC made the Transplanter available to other Kansas vineyards.

Project Approach:

As the "Extension" agency for the Kansas Grape and Wine Industry, HCC continues to answer phone and email inquiries as they come in. Combined, over 250 inquiries were answered throughout the year. HCC hosted or co-hosted 7 workshops with 84 attendees and presented at 4 other events including the Kansas Grape Growers and Winemakers Association annual conference in January. HCC did site-visit-consultations a total of 27 times. HCC personnel attended 6 industry trade association conferences nationwide bringing the latest industry research and technology information back to Kansas to be disseminated to the local industry.

HCC purchased the Holland Transplanter, model number 1525 in April (photo below). HCC used the transplanter to expand the college vineyard by approximately 5.5 acres. In addition, two other vineyards used the transplanter to plant roughly 14 acres of vines. A third vineyard took the lessons learned from seeing the HCC transplanter and expanded it to utilize a similar planter (designed for trees) in their own vineyard, planting an additional 3 acres.

The extension work in the project is a benefit for members in the grape and wine industry as they are afforded the opportunity to learn about the latest technologies and best practices utilized in other parts of the US as brought back by HCC personnel. New members of the industry benefit from this work as they are taught how to avoid common mistakes made by beginners which saves both time and money.

Having the vine transplanter allows grape growers to plant vines more efficiently which allows greater acreages to be planted. Kansas wineries would like to have more Kansas fruit available, and utilizing the transplanter will allow vineyard acreage to grow more rapidly to satisfy the great demand for Kansas-grown fruit.

Goals and Outcomes Achieved:

One of the performance goals was to continue to steadily increase the number of visits, workshop attendees, phone/email inquiries, and direct impacts by roughly 5%. This goal was partially achieved. Workshop attendance increased from 77 to 84; however, attendance per workshop was slightly down from 15 to 12 per workshop. We attribute that to one workshop in 2014 was outdoors on a rainy day. Mother nature intervened on those numbers. The phone/email inquiries remained steady from 2013 to 2014. Facebook "likes" increased from 196 to 233. The number of workshops increased from 5 to 7. National conference participation increased from 5 to 6 conferences. The other drop came in the form of site visits, from 38 in 2013 to only 27 in 2014. That drop is attributed to the vineyard expansion which took quite a bit of time through the spring and summer months which limited the ability of staff to visit other places. Additionally, two of the vineyard visits were multi-day as they included assistance with the new transplanter, and the extra conference required additional travel days out of state. Overall, adding the number of direct impacts (Workshop attendees, calls/emails, visits, Facebook likes) increased from 561 to 594, an increase of 6%.

Inadvertently, the plan to quiz workshop attendees was omitted at the first workshop. After hearing that workshop attendees were grateful to skip the quiz, HCC chose to eliminate that

portion of the project. That decision eliminates one of the measurables from this project, but ultimately the project was conceived to serve the industry, and industry members said they didn't like the quizzes.

The goal of purchasing the vine transplanter was to increase the vines planted at the chosen vineyards by 50% over the what was planted in 2013. HCC only planted vines at three vineyards with the transplanter, but the increase in plantings was dramatic. HCC's vineyard planted approximately 600 vines in 2013, and then used the transplanter to plant 3600 vines in 2014 (600% increase). At Somerset Ridge vineyard, they planted 600 vines in 2013 without the transplanter followed by planting 3600 vines with the transplanter (600% increase). The third vineyard only planted 75 vines in 2013 followed by planting 5000 vines with the transplanter in 2014 (6,700% increase). Clearly, at the vineyards where the transplanter was utilized the number of vines planted greatly increased. Our hope is that this trend continues for years to come; therefore, fulfilling long-term goals of increasing Kansas vine acreage from 350 acres in 2010 to 1000 acres by 2020. Here is a link to a video showing HCC using the planter in the college vineyard (https://www.youtube.com/watch?v=pXX0W4WYJtA).

Beneficiaries:

The 111 workshop attendees and recipients of the vineyard/winery visits were either current or perspective members of the Kansas grape and wine industry. Those 233 people visiting and liking the Facebook page are students, friends of the program, industry members, and general people around Kansas. The 250+ email/phone inquiries were also made by current and perspective members of the Kansas grape and wine industry. All of these Kansans were direct beneficiaries of this project.

The two vineyards which utilized the vine planter benefitted from this project, and publishing a video of the project will allow other Kansans to see how the planter works and potentially set up an appointment to use the planter at their own vineyard. Thus this project will have long term benefits for the grape and wine industry. The benefits of greater vineyard acreages and disseminated information from national conferences are the consumers of Kansas wine. An outcome of this project, while difficult to measure is more and better Kansas wine available to the consumer.

Lessons Learned:

HCC learned that demand for workshops, visits, and consultations has not dropped off since first offering these services to the grape and wine industry. Early consultations and visits have turned into thriving businesses, vineyard, and wineries. Recent consultations and visits are new and emerging businesses. Workshop attendance remains strong.

HCC has also learned that the demand for more grape acreage has not dropped off. While most vineyards are still expanding they are continuing to seek ways to expand faster in both size and number. It is apparent that the vine transplanter will be well used in coming years.

HCC learned, once again that two fulltime staff can only do so much. Attending an extra conference and expanding the vineyard took time away from vineyard/winery visits in 2014.

Luckily, HCC V&E received additional funding from a separate project which allowed for the hire of a third fulltime member of the team, Dylan Rolfes. Dylan will take over as the vineyard manager and viticulture instructor which affords more time for Nick Martin to back off from vineyard work to concentrate on the winery and enology instruction. This new edition should give the program more time for additional consultation visits in coming years.

Finally, HCC learned that workshop attendees do not much care for taking a quiz at the end of a workshop. After a paperwork error following the first workshop (the quizzes were mistakenly forgotten, left at the office) attendees voiced their gratefulness that they didn't have to complete a quiz after the workshop. They said they prefer to takes notes on the material they are interested in hearing without the pressure to recall other information that doesn't apply to them. When asked, attendees emphatically replied that they would rather skip taking more quizzes.

Additional Information:

HCC sold out of the 2012 vintage of wine in early 2014. The wine made from the 2013 harvest was bottled in summer of 2014 and has begun to sell. The 2013 vintage consisted of approximately 120 cases of wine.

Funds Expended to Date:

$34,750.00

Program Contact:

Scott Kohl
HCC Viticulture and Enology Program Director.
500 Miller Drive
Wamego, KS 66547
Phone: (785) 456-6006
E-mail: skohl@highlandcc.edu

Project Title:

State-Federal Employee of Kansas Department of Agriculture to become a licensed USDA Good Agricultural Practices Auditor

Project Summary:

Prior to this project, there were not any individuals in Kansas certified by USDA to perform GAP audits. The intention of this grant project was to pay for an employee of the Kansas Department of Agriculture (KDA) to become a certified third-party USDA GAP auditor, thus reducing the travel costs for producers in obtaining an audit.

In addition to certifying a GAP auditor, KDA created a GAP Certification cost-share program to reimburse producers for a portion of the costs associated with their GAP audit. The cost-share program allocated $4,000 for a minimum of four farms to receive a 50 percent reimbursement of their expenses, with a maximum reimbursement of $1,000 (per producer/farm) for the cost of a GAP audit.

Project Approach:

In the last year, the Kansas Department of Agriculture continued to share information about the GAP Cost Share program, including:

- Presentations at four farmers' market workshops in Hays, Parsons, Wichita, Olathe
- Presentation at the Kansas Farmers' Market Conference
- Farm to School GAP workshops in the following school districts: Pike Valley, Eudora, St. Francis/Atwood, Ell Saline, Maize, Doniphan West, Centre
- Contacted all Kansas businesses who have current GAP certification to share information about the cost-share program

Goals and Outcomes Achieved:

Goal 1: Train a State-Federal employee of the Kansas Department of Agriculture to become a licensed USDA GAP auditor

- Daryl Meierhoff, a KDA employee, completed training to become a licensed USDA GAP auditor. While an amount of $1,658 was budgeted for this item, the training and licensure only cost $1,150.56, leaving a balance of $507.44.

Goal 2: Offer a GAP Certification cost share program

- Program was created and applications are available on the Kansas Department of Agriculture's website: http://agriculture.ks.gov/ksda-services/grants-and-cost-share-programs/good-agricultural-practices-(gap).
- Over the course of the project, a total of six applications were received and reimbursed from the allocation for a total of $3,353.03. The original project allocation for cost-share was $4,000, leaving $646.97 in cost-share funds available.

Goal 3: Have ten Kansas specialty crop farms become GAP certified

- According to the USDA, there are currently nine (9) GAP certified producers in Kansas.
- While we are currently one short of the designation of ten certified producers, over the project period we had more than 10 different producers meet and obtain USDA GAP criteria. Due to normal market conditions, seasonal farming choices, and the fact that GAP audits are only valid for one year, we currently only have nine (9) certified producers.

Beneficiaries:

During the first quarter of FY16, Leonard Produce received $232.00 pursuant with the cost-share program. No other applications were received. The nine (9) current GAP certified producers in Kansas benefited from this project because it created an opportunity to reduce their GAP certification expenses. Furthermore, countless additional producers have gained information and education about the program with the hope that in the future they will see the value of the GAP certification as their own businesses grow and mature.

As per approval received from USDA-AMS on September 22, 2016, the $1,154.41 in remaining grant funding was transferred to salaries and wages to compensate for the time and effort spent on outreach and communication.

Lessons Learned:

In the future, we will select projects based on actual need/demand rather than perceived need/demand. In hindsight, it would have been advantageous to wait for the industry to request a Kansas GAP auditor and cost-share program, rather than creating it and waiting for interest to build. However, we hope that the infusion of information will be beneficial in the future.

Funds Expended to Date:

$5,658.00

Program Contact(s):

Janelle Dobbins
Kansas Department of Agriculture
1320 Research Park Drive
Manhattan, KS 66502
Phone: (785) 564-6759
E-mail: janelle.dobbins@ks.gov

Taylor Harms
Kansas Department of Agriculture
1320 Research Park Drive
Manhattan, KS 66502
Phone: (785) 564-7467
E-mail: taylor.harms@ks.gov

Project Title:

Increase Value through Commercialization of New Food Products

Project Summary:

A shared-use incubator kitchen using under-utilized space at the Kansas State University Olathe campus has benefited specialty crop entrepreneurs by allowing entry to a larger market of consumers through value-added ventures. The facility assisted specialty crop (SC) producers by granting them access to a commercial kitchen without the need to spend personal capital to invest in a facility. Without the need to invest personal funds and the chance to increase profits, the specialty crop producers had further leverage to hire additional employees. The Kansas Valued Added Foods Laboratory (KVAFL), a state-funded entity serving food entrepreneurs and companies, served as a cooperating agency for the creation of the incubator kitchen. The laboratory provided process authority letters, food safety advice, labeling assistance, regulatory compliance consultations, troubleshooting of processing issues in addition to educational workshops for Kansas's specialty crop producers.

Project Approach:

We leveraged and expanded partnerships with Specialty Crop Producers, Johnson County K-State Extension agents, Kansas State University Olathe Campus, K-State Rapid Response Center, Kansas Department of Agriculture, City of Olathe, Small Business Development Center, Area Chambers of Commerce, and other organizations and businesses**.**

We marketed the program through extension media, both in print and digital, and had a TV news story that highlighted the success of the first project.

We opened the shared use commercial kitchen incubator, moved some equipment to the location and adapted the electricity system accordingly, acquired necessary supplies, and developed client paperwork including schedule of fees and liability waivers.

We provided educational programs in value-added food processing, food safety, and regulation updates. These included one-on-one consultations, newsletters and workshops covering "How to Start a Food Business" and "Hazard Analysis Critical Control Point" system implementation**.**

Event 1 was a 3-day HACCP workshop which was attended by 21 people. It was held on October 15-17 and lead by Dr. Fadi Aramouni.

Event 2 was a workshop on "Starting a Food Business". It was organized by the Kansas Department of Agriculture in cooperation with the Johnson County Extension office. Forty-two (42) people were in attendance.

Both events were held at the Olathe Campus where information about the Shared Incubator kitchen was presented and follow-up with 3 clients of specialty crops.

We established procedures for keeping track of all users of the facility and also companies/entrepreneurs who visited the incubator kitchen for potential contract work or called with inquiries. We also developed a "facilities licensing agreement" and an "incubator use pricing list" (see attached) to keep data about clients' use.

Goals and Outcomes Achieved:

Through conversations with stakeholders and inquiries from entrepreneurs, the need for a greater number of incubator kitchens was established. The Incubator kitchen was visited by specialty crop producers looking to create value added products allowing them for extended retail opportunities past the commodity's natural shelf stability. The project encouraged two specialty crop producers to process value-added foods for marketing year-round: sauerkraut from a cabbage (Hoganville Farms) and a variety of spreads. Processors of other products such as salsas, BBQ sauces and dry spice mixes are being scheduled to use the facility.

An advantage of having the K-State Olathe campus as a site for the shared-use incubator kitchen was the availability of faculty and staff from the K-State Research and Extension Center for Horticultural Crops and the Food Science Institute to consult on potential projects and conduct workshops. The facility also has access to conference rooms that accommodated workshops or space for rent by producers for meetings with potential buyers or investors. The Olathe campus had also extended hour capabilities and offered an array of equipment that were utilized for this project. The KVAFL has previously placed students in hands-on internships with companies, and these undergraduate and graduate students were able to assist individual client companies of the incubator kitchen.

Specifically, the shared use kitchen incubator was able to assist specialty crop producers through:
1) Access to a facility for specialty crop producers to manufacture value-added products
2) Access to processing equipment to more efficiently commercialize value-added products
3) Access to training in value-added processing, food safety and nutrition labeling advice
4) Unique access to experts in food science and food safety.

Goal 1: Enlist at least 5 specialty crop producers to use the kitchen

Companies that have sought processing help in 2014
Hoganville Farms Sauerkraut
Bite Toffee LLC: Toffee confection
Epps Midwest Lumpias: Philippian savory pastry
Marcella Vasconcellos: Brazilian candies
Sweets Gone Raw: Vegan protein snack (Contracted)
Tim Hall: Cajun seasoning and meal mixes
Rye Restaurant: HACCP help with MAP
Soy Sen Zay: Edamame spread (contracted)
Intermark Food service: product development space
IsoNova Technologies: Pet food ingredients from specialty crops
Sean Feeney: BBQ sauce

Some of these companies/entrepreneurs have not been contracted yet for reasons related to their own funding and business plans.

Goal 2: Creating at least 5 nutrition labels for specialty crop producers

Hoganville Farms Sauerkraut
Bite Toffee
Sweets Gone Raw
Hall Cajun seasonings
Soy Sen Zay
Feeney BBQ sauce

Additionally, microbiological testing and shelf-life evaluation was performed on the sauerkraut, edamame spread and protein snack.

Goal 3: Provide educational opportunities for specialty crop producers

Offer workshops about Food Safety Modernization Act, food labeling, how to start a food business, Good Agricultural Practices, HACCP training and/or value-added processing techniques

- 3 -Day HACCP workshop held

- Starting a Food Business workshop: lecture addressed food labeling, FSMA and GAPs

Goal 4: Marketing material and cooperation

We advertised the incubator kitchen in our newsletter "The Scoop" that goes to our value-added clients. Also the facility was named as a prime contracting place for processing of Specialty Crops in materials released for Extension professionals in the state, KDA material and SBDC contacts. We worked with K-State communications to produce a TV story highlighting the first project (Hoganville Farms Sauerkraut) that was done on-site. The story was carried by a few TV stations in Kansas

<u>Beneficiaries:</u>

Direct beneficiaries of this project so far have been the companies and entrepreneurs who have used the facility either to manufacture product or get educated in issues related to food processing. Also one of the companies, Hoganville Farms, provided temporary employment and additional income to about 15 people who helped process the sauerkraut. To a lesser extent, other beneficiaries were growers who produced the raw materials used in the projects completed such as cabbage, the consumers who enjoyed local safe, quality products, and the taxpayers who funded the K-State Olathe campus.

Sauerkraut projects employed about 20 people to complete in addition to the 2 families who benefited directly from it as owners of the business. Other company owners also increased their income. Our estimate for direct economic beneficiaries is about 30 so far. In addition, we may want to count consumers who got products they're looking for, suppliers of ingredients and packaging material, and food distributors/retailers as indirect beneficiaries.

Lessons Learned:

1: Projects such as this one require a high degree of coordination and existing technical support systems to provide help with issues related to regulations, food safety and quality.

2: It is hard to predict how many people will utilize the facility in the first few months as it takes time to put all the pieces in place, and also because sometimes entrepreneurs are not ready for this step even though the facility and related personnel are ready.

3: Support in terms of economic feasibility issues and marketing would be very helpful to complement the services provided by this program.

Funds Expended to Date:

$60,360.00

Program Contact:

Dr. Fadi Aramouni
Kansas State University
Professor of Food Science
Phone: (785) 532-1668
E-mail: aramouni@ksu.edu

Program Title:

Using Technology to Connect Kansas Specialty Crops and Consumers

Project Summary:

The goal of this project is two-fold. First it provides web-based marketing solutions for buyers and sellers of Kansas specialty crops and products made with Kansas specialty crops. Second, it creates awareness of the volume of Kansas specialty crops to retail and wholesale buyers.

This project has created an online marketplace where each company/farmer has their own store and uses the marketplace portal to sell their items to buyers.

Project Approach:

The From the Land of Kansas Marketplace took longer to build then expected due to the complexity of the project. It was pivotal to KDA to build the site in a manner that made it easy-to-use for farmers and store owners.

Time and research was spent on three main areas to help make the website as user and seller friendly as possible. These areas are: the payment processor, tax calculation and shipping. These three areas were important to make sure the site was developed on a solid platform that would allow for additional project expansion, such as inclusion of CSA share sales/orders to further assist specialty crop farmers.

Goals and Outcomes Achieved:

Goal 1: Create a mechanism that would facilitate electronic sales transactions online of specialty crops.

- From the Land of Kansas Marketplace was launched in March 2015 for testing phase and publically in June 2015

Goal 2: Have 75 products on the From the Land of Kansas Marketplace sales from specialty crops or products containing specialty crops.

- Ecommerce marketplace is live and working to help companies sell their products to a broader audience. The marketplace currently houses stores for 23 companies, and 124 products that are specialty crops, or have specialty crops as the major ingredient.
- The site will continue to be promoted by the Kansas Department of Agriculture. We were able to use the site for orders and shipments of 10 different recipe cards focused on preparing and cooking locally grown specialty crops. Those cards were distributed through the site to 30 different farmers' markets in the state. More than 2,000 of each recipe, or a 20,000 total, were distributed through the Marketplace.

Goal 3: Create awareness about Kansas specialty crops and products available online through the From the Land of Kansas Market website.

- The site has had 732 orders from March launch through September. We have had 17,193 page views, with the average of 4.94 pages per session and 4:04 minutes average per session. Of the users, 27.2% are returning.

Beneficiaries:

In addition to the 23 companies that are currently on the marketplace, the site directly links to the From the Land of Kansas 83 specialty crop farmers and even more specialty food producers using specialty crops in their products.

Furthermore, the site is designed to be a go-to-location for wholesale buyers, retail and restaurants, to find new sources for Kansas specialty crops. This feature will be a focus for 2016. Now that the site is in working order, we can work with more specialty crop farmers during their slower time of year this winter.

Lessons Learned:

Online marketplaces are complex to build with a lot of variables to consider. One-on-one assistance is sometimes needed to walk farmers who are less tech-savvy through setting up their store and understanding how to fulfill their orders online. Tutorial materials have been developed, but will continue to expand as necessary to provide the appropriate information.

The marketplace takes constant promotion as part of the program to help buyers be aware of the tool and therefore the specialty crops and specialty crop products available for sale. Through events in early 2016 the marketplace promotion to these targeted audiences will continue to expand.

Funds Expended to Date:

$55,018.20

Program Contact:

Janelle Dobbins
Kansas Department of Agriculture
1320 Research Park Drive
Manhattan, KS 66502
Phone: (785) 564-6759
E-mail: janelle.dobbins@ks.gov

Taylor Harms
Kansas Department of Agriculture
1320 Research Park Drive
Manhattan, KS 66502
Phone: (785) 564-7467
E-mail: taylor.harms@ks.gov

Program Title:

Education and Assistance to Expand Kansas Vineyards

Project Summary:

The purpose of this project was to subsidize the purchase and planting of grape vines on behalf of Kansas viticulturists. This project was conceived in order to remedy the shortage of Kansas-grown fruit supplying the state's rapidly growing grape and wine industry.
Approach:

The Kansas Grape Growers and Winemakers Association solicited the state for funding to reimburse grape growers for half of the purchase and shipping costs for their new grape vine plantings. This process involved notifying potential growers of the opportunity to receive state assistance for new plantings, inspecting those new plantings, and dispersing funds. In total, ten different inspections across ten different vineyards were conducted.

Goals and Outcomes Achieved:

The project ultimately financed over $20,000 worth of new grape vines to 10 different growers. This resulted in the reimbursement of 60.31% of plantings for each grower, exceeding expectations by 10%. This has resulted in 20 new acres of state-subsidized vines, which is an increase of 8.9% of bearing acres in Kansas (223.1 bearing acres as of the 2010 Kansas Ag Statistics Survey) The goal to increase vineyard owner knowledge of grape growing was also achieved through the subsidization of conference fees for the participating growers to attend an "Intro to Grape Growing Workshop" conducted by the Viticulture and Enology Department of Highland Community College in Wamego.

A workshop entitled "Planting a Vineyard" and was held on November 16, 2013. Ten people were in attendance. The workshop was run by David Cairns, Bob DesRuisseaux, Terry Turner and Eric Guenther.

Surveys were drafted, handed out and collected at the workshop, unfortunately, at this point in time their location is unknown. We will continue to look for them. Therefore, we are unable to quantify Goal 2, increasing grower knowledge, at this time. However, since many of these participants have since planted vineyards, this is evident that a great deal of grower knowledge was gained.

Beneficiaries:

Ten Kansas grape growers received grant funding from this project.

Lessons Learned:

Grant funding acted as an effective inducement for growers to plant more vines than they would have otherwise planted. However, the three-month delay in procuring funding from the state resulted in an unnecessarily long process and numerous complaints from growers. Obligated funding should be dispersed by the state in a timelier manner for future projects.

Funds Expended to Date:

$25,530.00

Program Contact:

JoAnn Kuhlman
E-mail: eaglecreekgrapes@yahoo.com

Program Title:

From Tunnel to Table: Scaling up Specialty Crop Production in Kansas

Summary, Approach & Goals Achieved:

NOTE KRC Exceeded its proposed *TARGETS* in every category, under every goal. For totals, please see ACTUAL # reached tallies in response to question 3, below.

Goal 1: Increase Kansas specialty crop producers' knowledge of options and decision-making criteria needed to incorporate polytunnel solutions on their farms, to enhance the production and competitiveness of specialty crops.

Total for the year: *75 growers = **TARGET** goal.*
We well exceeded that number, with a total of
- 195 growers reached at in-person workshops
- 25 growers reached at annual conference session highlighting Tunnel to Table outcomes
- Numerous others reached through electronic and print sharing of project tool & press releases

Evaluation responses across project year: 78 participants responded as follows:
- **During this workshop did you receive information for decision-making around polytunnels?**
  - 99% of respondents replied "**Yes**".
- **During this workshop did you increase your knowledge of polytunnel options?**
  - 100% of respondents replied "**Yes**".
- **After this workshop will you utilize information you receive decision-making about polytunnel?**
  - 100% of respondents replied "**Yes**".
- **After this workshop will you utilize info you received in advising others about tunnels?**
  - 92% of respondents replied "**Yes**".

In Quarter 3 alone: As a result of project outreach,
- 90 beginning and experienced growers registered and participated in our three Fall workshops, and
- 18 expert growers present and participate in these workshops.

Description of Quarter 3 Activities Under Goal One:

- 4 press releases were issued during quarter four (see attached files) – each of which shared information related to goal 1 to a broad and difficult to quantify audience. Tunnel to Table press releases had incredible reach and diverse (even national) coverage.
- 3 workshops were held this quarter in: Colby (8/31), Winfield (9/4), and Clay Center (10/5).
- All workshops included separate presentations on three key: 1) structure, 2) production, and 3) marketing and economics.

- STRUCTURE presentations were covered by Dan Phelps, Activity Coordinator. He provided information on the basics of polytunnels (101), benefits, challenges and potential solutions, site selection, and construction.

- PRODUCTION presentations featured panels of between four and seven local polytunnel producers who shared regionally-specific knowledge with participants through storytelling and Q & A. Although production was the main focus, presenters also shared information about their structure and marketing techniques as well.

- MARKETING AND ECONOMICS presentations were covered by Chris Sramek (Vice President of High Plains Food Co-op) at the Colby event and David Coltrain (K-State Extension Agent for Finney County) in Winfield and Clay Center.

o All three workshops were five hours in length – with the first 2/3 of the event held in a community meeting room and the final 1/3 involving a farm tour, led by one or more local farmers with extensive knowledge of high tunnel production. Most of the presenters attended these farm tours and continued to share their experience and network with area growers.
o All workshops ended with a low tunnel construction demonstration, led by Dan Phelps.
o All Fall workshop participants received current drafts of the Tunnel to Table Tools (then titled "Polytunnel Informational Guide" and "Resource List".
o Participants also had access to an information table that included free brochures and publications, such as: *Growing for Market* issues, Cornell food safety manual, KDA Driftwatch program information, area farmers market information, K-State Research and Extension handouts, National Resource and Conservation Service (NRCS) handouts and info on funding for tunnels, North Central Sustainable Agriculture Research and Education (SARE) grower resources and grant opportunity information, Kansas Center for Sustainable Agriculture and Alternative Crops info.
o Several participants also left with copies of KRC's *Finding Your Niche: A Marketing Guide for Kansas Farms* (available by donation, on a sliding scale – free to those who did not donate).

Goal 2: Increase knowledge of extension, economic development, farm credit, and other service agencies about tools and information that can assist Kansans in decision-making for enhanced specialty crop productivity and profitability through use of protected growing systems.

Total for the year: *15 farm service providers = **TARGET** goal*. We exceeded that goal.
o 20 farm service providers participated in KRC's 2014 Tunnel to Table workshops.
o Far more farm service providers will be reached through ongoing distribution of *Growing Under Cover* (the informational tool that resulted from this project).

 Quarter Three:
o As with the spring workshop, a number of farm service providers attended each of the three Fall workshops. Service providers were introduced at the beginning of each workshop and each gave brief presentations about their organizations and the services they provide for Kansas farmers. Service agents attended the full event and received the same information as growers, thereby increasing their knowledge about these subjects. The following service agencies were represented at the fall workshops:
o K-State Research & Extension, Riley County
o K-State Research & Extension, Harper County
o K-State Research & Extension, Finney County
o K-State Research & Extension, River Valley District
o Clay County Conservation District
o National Resource Conservation Service (NRCS)
o Marion County Economic Development

- North Central Sustainable Agriculture and Research and Education (SARE)
- Kansas Center for Sustainable Agriculture and Alternative Crops (KCSAAC)
- High Plains Food Co-op
- Goodland Farmers Market

Goal 3: Kansas farmers will increase their use of polytunnels to grow specialty crops as a result of this project.

Totals for the year: *2 specialty crop producers = **TARGET*** beneficiaries from polytunnel construction.

- 1 specialty crop farm benefited from KRC activity coordinator assistance in constructing a DIY high tunnel (Q2/ Spring) – part of the coordinator's project-related research.
- 7 additional specialty crop farms across Kansas benefited from low tunnel infrastructure funded by Specialty Crop Block Grant – including 4 farm hosts and 3 low tunnel giveaway applicants
- Another 6 farms benefited from Farm Aid funded low tunnel infrastructure they applied for and won – a giveaway process whose facilitation was made possible by SCBG.
- 37 producers responded to evaluation that they would increase their use of polytunnel solutions by 2015.

Evaluation results: 78 workshop participants responded as follows:

- **In 2014 or 2015 will you implement a polytunnel solution into your growing systems (*such as: adding a new tunnel structure, or trying new tunnel management strategies*)?**
  - "Yes, by 2015" response from 49% (37 producers) *(**TARGET** = 10% would say yes)*
  - "Yes, *after* 2015" response from 10%

Goal 4: Increase college student and professor knowledge of options and decision-making criteria needed to incorporate polytunnel solutions on Kansas farms, and understanding of infrastructure supports available to and needed for the advancement of specialty crop competitiveness in Kansas

Totals for the year: *10 individuals from Kansas Universities = **TARGET** goal*

- 43 students from Kansas State University Vegetable Crops Class increased their knowledge through a presentation from the Project Director & Activity Coordinator on March 13 (Q2).
- 7 additional individuals from Kansas Universities participated in-person in project workshops
- Numerous other University folks will benefit through the circulation of *Growing Under Cover* via Extension offices, press/media promotion, and direct emails to professors who have shown interest (including professors at Cornell and Iowa State who contacted us early in the year).

 Quarter 3: Academic participants in our Fall Tunnel to Table workshops included:

- Keri Ebert, KCSAAC/ Kansas SARE
- David Coltrain, K-State Research and Extension, Finney County
- Jenni Carr, K-State Research and Extension, Barton County
- Gregg Eyestone, K-State Research and Extension, River Valley District

<u>Beneficiaries & Work Plan:</u>

Final Tally on Measurable Outcomes – Projected vs. Actual *Targets* Reached

Goal 1 –
75 = **TARGET** # of growers with increased knowledge
220+ = **ACTUAL** # reached

Goal 2 –
15 = **TARGET** # of service providers with increased knowledge
20+ = **ACTUAL** # reached

Goal 3 –
2 (plus 10% of evaluated responses) = **TARGET** # farms increasing use
51 (includes 49% of evaluated respondents) = **ACTUAL** # reached
Goal 4 –
10 = **TARGET** # of university folks reached

Work Plan Deliverables – full project year
We have completed all proposed activities in the Work Plan, these include:

November 2013:
Engaged Project Team – including:
- Contractual Activity Coordinator (Dan Phelps),
- Communications Coordinator (Joanna Voigt - staff),
- Director (Julie Mettenburg - staff), and
- Project Manager (Cole Cottin- staff).

November 2013-September 2014:
Comparative Specialty Crop Growing Systems Analysis – Activity Coordinator, Project Manager
- Launched KS Tunnel Growers Survey – completed by 60 growers – to inform tool creation
- Gathered and documented existing data on various polytunnels options, including an assessment of capital investment.
- Engaged in hands-on construction of DIY Tunnel with KS Farm.
- Visited Four Season Tools and City Bitty Farm in KC, gathered data and information for the growing systems analysis from their library and interviews with staff
- Constructed and discussed low tunnels during the farm tour portion of all four workshops, learning from experiences of growers at all events.
- Draft Tools / "Resource List" and "Informational Guide" drafts distributed at workshops.
- Polytunnel Options – A Comparative Guide included as a key resource in the final *Growing Under Cover* document/ tool.

January 2014-March 2014 & August 2014-October 2014:
Educational Activity Planning – Activity Coordinator, Project Manager, Director, farm hosts, speakers
- Selected location, date, and time for each workshop.
- Formed agreements with a total of four farm hosts.
- Crafted agendas, purchased needed supplies and equipment.
- Created evaluation tools
- Created event administration plan

January 2014-March 2014 + August 2014-October 2014:
Registration & Communications Plan – Activity & Communications Coordinators, Manager, Director

- Designed and implemented communications strategy for all workshops. This included:
  - Registration set-up
  - Targeted & broadly public invitations to workshop one
  - Press Releases & Kansas Rural Papers Articles to promote events & co-advertise Decision-Making Tool
- Event follow-up includes:
  - Announcement of *Growing Under Cover* publication
  - All participants were added to an e-mail database and will receive future correspondence on high tunnel and other specialty crop related events and information… including an invitation to participate in KDA's upcoming specialty crop study!

April 2014:
First Workshop in Series – Activity Coordinator, Program Manager

- Over 100 participants visited, toured, and learned from an established farm with years of experience using multiple types of polytunnels for specialty crop production.

August 2014-October2014:
Three Additional Workshop Events – Activity Coordinator, Program Manager

- 113 participants attended the following three fall workshops:
  - August 30 in Colby: held at the Prairie Museum with a farm tour of Sharing the Bounty Farm.
  - September 14 in Winfield: held at the Baden Square Senior Center with a farm tour of Werner Creek Farm.
  - October 5 in Clay Center: held at Clay County Fairgrounds Conference Center with a farm tour of Jay's Jellies, Produce and More
- All three events included farm tours from established growers with years of experience using multiple types of polytunnels, including low tunnels, high tunnels (kit), homemade high tunnels, mobile high tunnels, and combined low and high tunnel. Each farm tour discussed the difference between polytunnel production and field production (no tunnel).

November 2014:
Completed Tunnel to Table tools for specialty crop farms – Activity Coordinator, Program Manager, Director, Communications Coordinator, Graphic Design Contractors

- Several draft versions were distributed at the workshops
- Subsequent drafts were altered based on analysis and farmer/ participant feedback
- The final draft, titled, *Growing Under Cover: A Guide to Polytunnel Options for Kansas Grower,* was finalized in November 2014.
- *Growing Under Cover* includes:
  - A Comparative Chart of Polytunnel Options, which includes a cost/benefit analysis,
  - Polytunnel Terminology (101),
  - High Tunnel Benefits & Challenges,
  - High Tunnel Considerations,
  - Low Tunnel Basics, and
  - A Resource List, which includes Recommended Educational Resources, Polytunnel Supply Sources, and Funding Opportunities.

November 2014:
Released Tunnel to Table tools for specialty crop farms – Activity Coordinator, Program Manager, Director, Communications Coordinator, Graphic Design Contractors
- Drafts of the tools were released in their most current draft form at each of the four workshops (April, August, September, October).
- A near final version was also shared with participants at KRC's Conference (early November).
- The final tools were published as one document, *Growing Under Cover* (end of November).

November 2014:
Collect and compile distribution data and evaluation survey data for Tunnel to Table tools. – Activity Coordinator, Program Manager
- **215 participants** in KRC's Tunnel to Table workshops received access to and an opportunity to provide feedback on drafts of these tools as they were being created.
  - Evaluations: At every workshop, the most current draft of Tunnel to Table tools was ranked by participants. When asked to "**rank the usefulness of KRC Handout**s: Informational Guide and Resource List", the **majority** of the 78 evaluation respondents gave the tools a 5 out of 5 (***4.64 was the average rating***).
- **25 participants** in the "Reduce Risk & Increase Yields with High Tunnels" session at KRC's annual conference (11/8/14) received a copy of the near final draft of these tools (prior to graphic design).
- **130 hard-copies** of the final tools, published with the title *Growing Under Cover,* were printed as part of the KDA budget for this project. The Kansas Department of Education will distribute those copies to all KSU Research & Extension offices, and to participants in their upcoming statewide Farm to School workshop series for growers.
- **80 additional print copies** are expected to be distributed to participants in KRC's two upcoming Risk Management for Specialty Crop Growers workshops (March 2014) – funded by a separate USDA-RME grant
- We expect extensive online/ electronic circulation of the final *Growing Under Cover* to reach well beyond the numbers cited above.

October 2014-Novmeber 2014:
Compile participant data from Tunnel to Table educational activities. - Activity Coordinator, Program Manager
- All workshops included evaluations.
- 78 of 215 attendees completed and submitted workshop evaluations.
- Overall, respondents were very pleased with the workshops. For example, when asked to rank their "**overall satisfaction with today's workshop**" every respondent gave a 4 or 5 out of 5 (***4.71 was the average rating***).
- A farm service provider commented in their evaluation, **"Excellent and very informative; presented information not readily available anywhere else."**
- A beginning farmer stated, **"There are some things [we learned here] that changed our minds towards something and also, against other things. Just amazing!"**

<u>Success Story & Lessons Learned:</u>

This year, a total 1,300 feet of free low tunnel infrastructure was awarded to 13 specialty crop growers across Kansas as part of the Kansas Rural Center's "Tunnel to Table" educational

programming - to increase the number of growers experimenting with low tunnels, which put to work the same simple technology as high tunnels for a fraction of the price. Low tunnels can provide a cost-effective investment option for those seeking to begin or advance their use of protected growing systems on their farms. In recent years high tunnels have gained popularity and abundance across the Kansas landscape, but the lesser-known low tunnel offers an alternative form of crop protection and season extension that may work even better for some growers and in certain situations.

How do low tunnels and high tunnels differ? Structurally, low tunnels are essentially miniature versions of high tunnels. However, unlike high tunnels, low tunnels are too short to walk in, are moved seasonally, and lack much of the structural support offered by high tunnels. Another major difference is that the plastic on a high tunnel is attached to the structure, whereas plastic on a low tunnel is weighted down on the ground. The cost difference between high tunnels and low tunnels is significant. Whereas high tunnels using half inch metal pipes and six mil. greenhouse-grade plastic cost two to three dollars per square foot, low tunnels with the same pipes and plastic cos just 30 to 60 cents per square foot. The cost drops to as little as five cents per square foot if metal wire and row cover - a breathable poly-spun fabric - are used instead.

Low tunnels and high tunnels are also used a bit differently. Unlike high tunnels, these low cost structures can be dissembled, moved throughout the farm, and work with the contours of the land. Similar to high tunnels, low tunnels can provide crops with several degrees of cold protection at night but, due to their smaller stature, low tunnels heat up more rapidly during the day. In Kansas' climate, low tunnels may be covered in plastic from late October or early November through late February or early March, at which point the operator will need to remove the plastic. This is because, similar to high tunnels, low tunnels need to be manually ventilated if temperatures near 70 degrees, as they occasionally do in late fall and early spring.

Low tunnels and high tunnels each have their own unique set of challenges. Because you can't stand-up in low tunnels, you must partially remove the covering to access your crops which can make it difficult to harvest or weed in high wind, rain, snow, and sub-zero temperatures. Low tunnel construction and dismantling must be done annually and is labor intensive. Low tunnels are, of course, lighter, so Kansas farmers must take extra measures to ensure their low tunnel doesn’t end up in the neighbor’s tree line. According to Johnny’s Selected Seeds - a company that sells low tunnel supplies and has done a lot to promote and advance the technology - growers in high wind areas need more than just sand bags to keep their low tunnel structures secure. Burying the edges is effective, but Johnny's also recommends putting in stakes on each side of the tunnel, offset, and crisscrossing rope over the length of the structure.

Appropriate crops for winter production in either type of tunnel include: spinach, kale, collards, chard, leeks, scallions, carrots, parsnips, cabbage, parsley and arugula. Many other crops may not survive the entire winter, but their season can begin much earlier and be pushed well beyond the first frost.

What is the potential for low tunnels in Kansas? “There is very little research or awareness out there about the potential of low tunnel production," explains Dan Phelps, Tunnel to Table Activity Coordinator for KRC. "By increasing the number of growers experimenting with low tunnels in Kansas, we hope to increase our understanding of the unique possibilities these

structures can offer in our state." Eliot Coleman, who is largely responsible for the advancements seen in low tunnel technology nationally, has spent decades perfecting his techniques, through trial-and-error. Whereas snow is the major challenge on his farm in coastal Maine, Kansas farmers are tasked with experimenting and finding creative ways to overcome the challenge of high winds.

Tobacco Road Farm in central Connecticut is a shining example of the potential of low tunnels. For the past decade, they have opted out of using high tunnels entirely, and strongly favored the benefits of low tunnel production. Low tunnels now cover more than an acre of their farm. "The seeding dates for their winter and spring low tunnel crops are astonishingly late," writes Tracy Frish about Tobacco Road Farm's capacity to harvest low tunnel crops year-round (Growing for Market, July 2006). "They continue planting through the beginning of December and start up again in February… Normally, harvest continues until Christmas and then resumes in March. The mild winter of 2005-06 allowed them to harvest at intervals in January and February as well." The estimated annual operating cost for Tobacco Road Farm's low tunnels is three cents per square foot - due to the fact that they use galvanized metal wire for hoops instead of metal hoops (they say the wire bounces right back from heavy snow loads) and they use two layers of one-and-a-half mil. construction-grade plastic (compared to the typical, heavier weight, more expensive, four to six mil. greenhouse grade plastic).

What are some low tunnel options for Kansans? As this Connecticut farm demonstrates, there are many options for low tunnels configurations - including using shade cloth, different thicknesses of row cover, or different types of plastic than the standard greenhouse plastic found on high tunnels. As is explained below, each configuration offers its own unique benefits.
Shade cloth can be used without plastic on low tunnels, to extend the season of cool season crops into the warmer months. This can be especially effective when combined with misters set on timers. Low tunnels covered with row cover allow air and water to penetrate while providing several degrees of frost protection. Though row cover does not offer the daytime temperature increase that plastic covered low tunnels can provide, on sunny days it can be beneficial that no ventilation is required. Using thick row cover on low tunnels can help give warm season crops a jump start in the spring and can help extend the growing season past the first frost, perhaps as late as winter solstice (but not for overwintering crops). Thick row cover also protects crops from the wind, though additional measures must be taken in high wind areas to keep the row cover attached. Thinner row covers offer little cold protection, but instead serve as physical barriers to insects - preventing pests like squash bugs and cucumber beetles from reaching the crop. However, many tunnel crops require pollination from beneficial insects. In these cases, the row cover is removed for pollination once the plants start flowering, at which time the plants are established enough to deal with some pest pressure.

Perforated plastic provides about as much frost protection as row cover, but also provides much higher daytime temperatures - similar to those of greenhouse plastic. However, unlike greenhouse plastic, perforated plastic self-ventilates when temperatures reach a certain point and the slits in the plastic walls contract, allowing heat to escape. Kansas high tunnel farms growing in the winter can also benefit from the additional warmth provided by low tunnels placed within the high tunnel. While a high tunnel with a single layer of plastic provides one hardiness zone of protection, adding a plastic covered low tunnel will provide one additional zone of protection. This combined low-and-high-tunnel method allows, for example, crops grown in zone 5 to be

grown in a climate controlled environment equivalent to zone 7 - which is like the equivalent of moving your operation from Topeka to Dallas! The Tunnel to Table project has demonstrated overwhelming and growing interest in polytunnels, as well as an ongoing unmet need for education and technical assistance on this topic. This has created a strong desire for the Kansas Rural Center to continue working in this area, with many ideas brewing and several events already planned. On November 8, Dan Phelps (Tunnel to Table Activity Coordinator) and Greg Garbos (Four Seasons Tools) presented at the Kansas Rural Center's 2014 Farm and Food Conference. The presentation was titled "Reduce Risk and Increase Yields with High Tunnels", and built on topics covered at the previous four Tunnel to Table workshop series. It received overwhelmingly positive response, with a number of growers following up for technical assistance and further information supports.

In December 2014, the Kansas Rural Center will pursue further tunnel-related work through a new project entitled "*Women in Farming: Managing Production, Legal and Financial Risks as Farmers, Farm Partners, and Landowners in Kansas*." Through this project, two full-day workshops about risk management for specialty crops with cover issues related to high tunnels and be tailored specifically towards women farmers.

As mentioned in the Success Story (above) low tunnels have a lot of potential as a low cost alternative to high tunnels. Despite this, there is very little information available to Kansas farmers about the appropriate application of this technology in specialty crop operations and there a few farmers that are utilizing low tunnels in their operations. The Low Tunnel Giveaway was created to get more low tunnels in the hands of experienced Kansas farmers so that they can experiment and problem solve with low tunnel production. Part of the criteria for accepting a low tunnel was that the farmer would be willing to share their experience with other farmers. We believe that this will happen naturally through peer-to-peer education. But in order to formalize and spread it to the largest audience possible we will be seeking future funding for one or more low tunnel projects. Another unmet need we see is that of hands-on construction education/support. KRC has led previous high tunnel construction workshops and would like to work with Extension to help build this capacity statewide.

Funds Expended to Date:

$34,130.00

Program Contact:

Mary Fund
Executive Director, Kansas Rural Center
4021 SW 10th Ave. #337
Topeka, KS 66604
Phone: (866) 579-5469
E-mail: ksrc@rainbowtel.net